TECHNICAL NOTES

LAKE STATES FOREST EXPERIMENT STATION
U.S. DEPARTMENT OF AGRICULTURE · · FOREST SERVICE

No. 419

Fire Occurrence: Periodicity of Good and Bad Years

The number of fires that occur annually varies widely from year to year. The occurrence of unusually good and bad years at intervals, however, led to an analysis of past records to determine if fire occurrence in the Lake States follows a regular pattern. The result, based on 39 years' (1914-1952), record indicates the possibility of an 8-year cycle. While this cycle has a correlation of 70.0 percent with past experience, which is statistically significant, it offers no assurance that fires will follow the same pattern in the future. In fact, fire occurrence during one of the five periods covered was quite at variance with the pattern indicated. The sequence of good and bad years indicated by past records, however, is of interest.

If the pattern established holds up; 1954, 1955, 1956, and 1957 should be worse than average years and 1958, 1959, 1960, and 1961 better, with 1957 the worst and 1959 the best years. Using the last 8-year average (1945-1952) or 3,976 fires as normal, the number of fires indicated for the years 1954 to 1961 are shown below, with a variation of standard deviation of ± 20.7 percent. As stated previously, however, this is only speculation based on past fire occurrence.

Year	Indicated percent of 1945-52 average (± 20.7%)	Indicated number of fires (± 823)
1954	107.0	4,254
1955	119.6	4,755
1956	112.5	4,473
1957	131.5	5,228
1958	92.1	3,662
1959	62.5	2,485
1960	92.1	3,662
1961	81.3	3,232

The over-all pattern established, together with the actual occurrence reported, is shown in the chart on the reverse of this sheet, in which the number of fires per year is given as the percent of the current 8-year average in order to eliminate the effect of increasingly effective fire control effort. On the chart 100 percent represents normal fire occurrence, while over 100 percent indicates worse and below 100 percent better than average years.

July 1954

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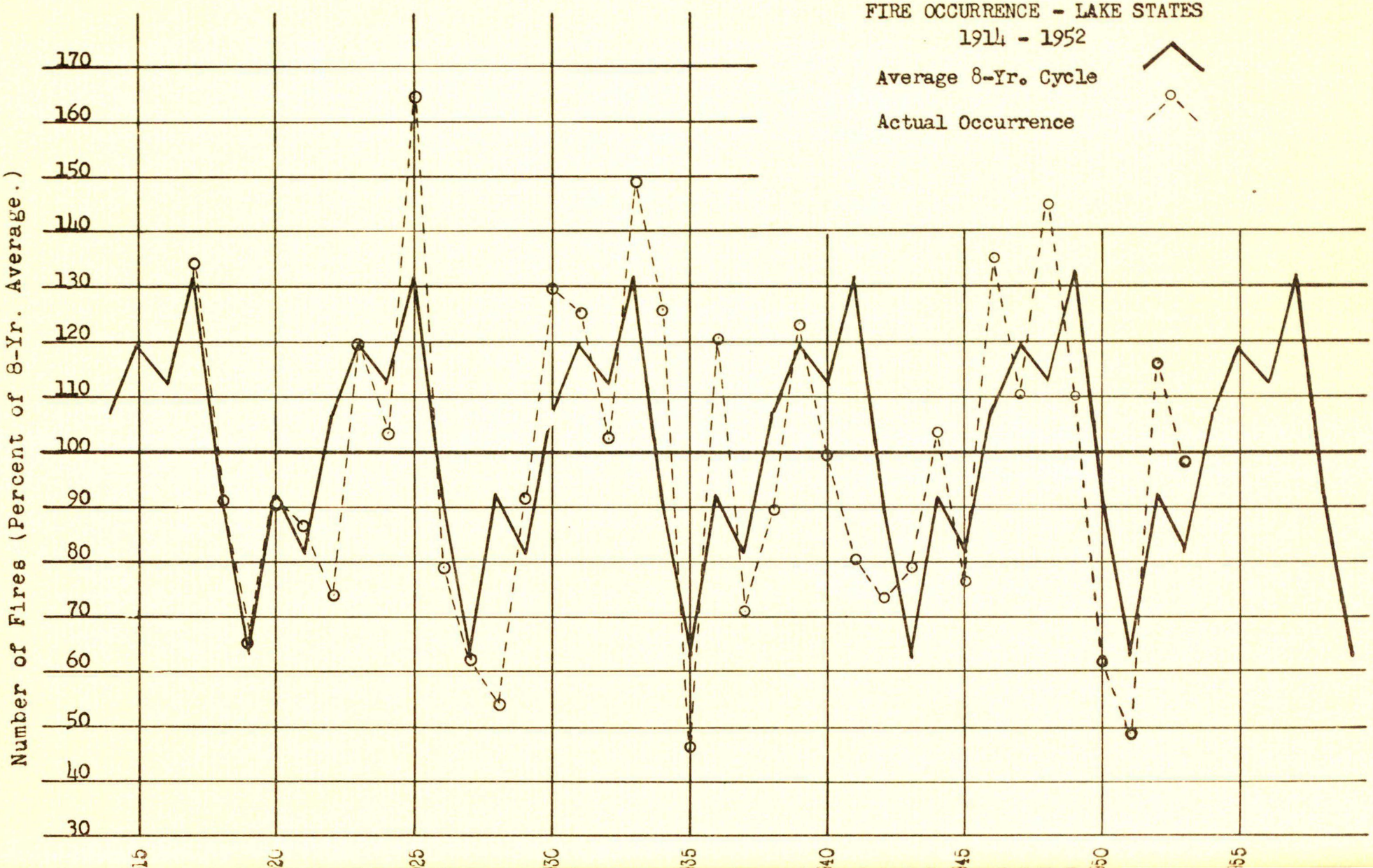
MAINTAINED AT ST. PAUL 1, MINNESOTA, IN COOPERATION WITH THE UNIVERSITY OF MINNESOTA


FIRE OCCURRENCE - LAKE STATES
1914 - 1952
Average 8-Yr. Cycle
Actual Occurrence
Number of Fires (Percent of 8-Yr. Average.)
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
15
20
25
30
35
40
45
50
55